Don Van (2001). Associate Professor and Department Chair. B.S. and M.S., University of Illinois in Chicago; M.S. and Ph.D., New Jersey Institute of Technology; P.E., CEM.

Jay Bernheisel (2006). Assistant Professor of Engineering. B.S.M.E. and M.S.M.E., Rose-Hulman Institute of Technology; Ph.D., Northwestern University.

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Randal S. Schwindt

360. Computational Engineering (3) S
Prerequisite: Jr. Standing. Reciprocal credit: PHY 360.
Teaches computer skills for conducting research and performing engineering analysis; fosters the development of pro ciency in software packages and Matlab.

375. Power Systems and Electrical Machines (3) S
Prerequisite: EGR 262.
Introduces the basic principles of power systems and electrical machines with an emphasis on 3-phase power, theory of machinery, and principles of machine operation. Topics include transformers, electro-mechanics, synchronous machines, induction motors, and DC motors and system-level topics such as power ow, faulty analysis, and economic operation.

376. Power Systems and Electrical Machines Lab (1) S
Pre or co-requisite: EGR 375
Demonstrates through laboratory experiments the principles of electrical machines studied in EGR 375. Experiments investigate the operations of DC motors, DC generators, AC motors, and AC generators.

385. Energy Conversion (3) S
Prerequisite: EGR 250.
Provides a comprehensive analysis of current energy systems, including fossil power plants, nuclear plants, and other forms of renewable energy sources; covers the Rankine cycle, steam generators, combustion, and turbines; presents information on the environmental impact of energy generation.

405. Electronic Circuit Analysis and Design (4) S
Prerequisite: EGR 262.
Introduces fundamental principles of electronics, including analysis and design techniques for circuits containing diodes, eld effect transistors, and bipolar junction transistors. Includes weekly lab.

416. Physical Principles of Solid State Devices (3) S
Prerequisite: EGR 210. Reciprocal credit: PHY 416.
Introduces concepts in material science and quantum physics, including modern theory of solids, magnetic and optical properties of materials, semi-conductors and semi-conductor devices, dielectric materials, and superconductivity.

450. Thermo-fluid Dynamics II (4) F
Prerequisite: EGR 250.
Properties of the ideal gas, models of incompressible and corresponding states, gas-vapor mixtures, availability and irreversibility, power and refrigeration cycles, viscous and boundary-layer ow, inviscid incompressible ow, compressible ow, and turbo-machinery. Includes weekly lab.

456. Machine & Mechanism Theory & Design (3) F
Prerequisite: EGR 290.
Covers design, selection, and evaluation of mechanisms for various applications, including planar and spatial linkages, cams, gears, planetary and non-planetary gear systems, linkage synthesis, and linkage dynamics.

470. Heat Transfer (3) S
Prerequisite: EGR 450.
The analysis of various heat transfer modes, including conduction, natural and forced convection, and radiation; introduces industrial applications of heat transfer such as heat exchangers, waste heat recovery, and steam generators in a nuclear plant or in a gas turbine electrical generator.

475. Control Theory and Design (4)
Prerequisite: EGR 262.
Introduces analysis and design of linear control systems using root locus and frequency response techniques; includes system representation and control system characteristics. Includes weekly lab.

491. Major Project Design I (3) F
Allows a student to work individually on a real-world engineering problem assigned by either the instructor or a sponsoring industry; requires the student to solve the problem by applying the engineering design and analysis method; involves oral and written presentations, where the written presentation is in the form of a design portfolio that documents a full engineering study of the project.

492. Major Project Design II (3) S
Allows a team of students to work on a real-world engineering problem assigned by either the instructor or a sponsoring industry; requires the student to solve the problem by team effort via project management; involves oral

written presentations, where the written presentation is in the form required for EGR 491. The oral presentation will be a publicly announced event.

498. Engineering Seminar (2) F
Prerequisite: Senior Standing.
Provides a comprehensive review of all engineering fundamentals, including mathematics, physics, chemistry, and economics, to prepare engineering seniors for the national Fundamentals of Engineering (FE) examination; also provides a review of engineering ethics and Christian conduct in the workplace.

499. Seminar (1-3) As Needed
To be used at the discretion of the department.

179-279-379-479. External Domestic Study Programs (1-3) As Needed
All courses and their applications must be de ned and approved prior to registering.

180-280-380-480. Study Abroad (1-4)
All courses and their application must be de ned and approved prior to travel.

195-6-7. Special Studies (1-4)
295-6-7. Special Studies (1-4)
Lower-level group studies which do not appear in the regular department offerings.

395-6-7. Special Studies (1-4)
Upper-level group studies which do not appear in the regular department offerings.

495-6-7. Independent Study (1-4)
Individual research under the guidance of a faculty member.